Assembly Instructions MP-P Power Supply

MP-P Power Supply

The MP-P Power Supply is the supply designed to power the Mother Board (MP-B) and its complement of plug-on boards including the MP-A Microprocessor/System Board, up to four MP-M full 4,096 word memory boards and eight interface boards. It includes the power transformer, bridge rectifier, filter capacitor and power inter-connect board. The Power Inter-Connect Board is a 3 1/2" x 2 3/4" circuit board supporting the protection fuse ±12 volt rectifier with filter, and the MP-B Mother Board wiring connector. The connector greatly aids in inter-connecting and servicing the unit.

Before starting on the power supply, you must have already completed assembling the MP-B Mother Board and must have the MP-F chassis kit, or the one you plan to use with the unit available for assembly.

When the SWTPC Computer System is being assembled, work on only one board at a time. Each of the system's boards and their associated parts must not be intermixed to avoid confusion during assembly.

MP-B Mother Board Connector Wiring

(✓) Cut eleven 12" pieces of #18 gauge or heavier wire.

(✓) Following the table below, solder one end of each of the eleven wires to the MP-B Mother Board connection points listed and solder the appropriate connector pin onto the other end. Attach the wires to the MP-B Mother Board from the "TOP" side of the board.

MP-B POINT	CONNECTOR	CONNECTOR PIN #
7-8 VDC UNREG	female cylindrical	1
7-8 VDC UNREG	female cylindrical	2
7-8 VDC UNREG	male cylindrical	3
GND	female cylindrical	4
GND	female cylindrical	5
GND	female cylindrical	6
-12	male cylindrical	7
UDI	female cylindrical	8
M.RST	lug type	NONE
+12	female cylindrical	10
UD2	female cylindrical	11

(✓) Following the table above, plug each of the wires with the cylindrical pins into the appropiate holes of the nylon connector block. The pins are inserted from the back side of the connector and each of the holes are numbered on the connector. Check the position of each wire with the Power Supply Wiring Diagram before pressing each pin into the connector.

(✓) Cut a 5" piece of #18 gauge or heavier wire. Attach and solder a lug connector one one end and attach and solder a female cylindrical connector on the other . Insert the female cylindrical connector end into pin number 9 of the nylon connector block.

This completes the mother board connector wiring. There should be no wire in pin number 12 of the connector.

MP-P Power Supply PC Board Assembly

NOTE: When assembling the board use a low wattage soldering iron (not a gun). Do not use acid core solder or any type of paste flux. We will not guarantee or repair a kit on which either product has been used. Use only the solder supplied with the kit or 60/40 alloy resin core equivalent.

( ) Remove any oxidation from the copper on the circuit board with a piece of Scotchbrite® .

( ) Before installing any parts on the circuit board, check the copper side of the board over carefully for incomplete etching and foil "bridges" or "breaks". It is unlikely that you will find any but it is best to find them now if there are any.

( ) Install the capacitors on the board. Be sure to orient the electrolytic capacitors correctly. The polarity is indicated on the component layout drawing. Capacitors C3 and C4 are not installed on the board. Solder.

As with all other components unless otherwise noted, use the parts list and the component layout drawing to locate each part and install from the "TOP" side of the board, bending the leads along the bottom side of the board and trimming so that 1/16" to 1/8" of wire remains.

( ) Install the diodes on the board. The diodes must be turned to match the outlines on the component layout drawing. Solder.

( ) Attach the fuse clips on the board. Turn the clips so the ridge on the end of each clip will keep the fuse centered when snapped into place. Solder.

( ) Install the 12 pin Molex Wafercon® connector, J1 on the board oriented as shown in the component layout drawing. The trimmed corners on the end of the connector must be oriented correctly. (exactly as shown in the component layout drawing) If any of the pins loosen while inserting the Wafercon® on the board be sure to push them down all the way flush with the connector. Solder.

( ) Now that all of the components have been installed on the board, double check to make sure all have been installed correctly in their proper location.

( ) Check very carefully to make sure that all connections have been soldered. It is very easy to miss some connections when soldering which can really cause some hard to find problems later during checkout. Also look for solder "bridges" and "cold" solder joints which are another common problem.

This completes the assembly phase for the MP-P power supply board.

Assembling the MP-F Chassis Base Plate

You should now attach the following components to the MP-F chassis base plate. Use the Power Supply Wiring Diagram to aid in the proper orientation of each component.

(✓) Attach each of the four press-on rubber feet to the bottom side of the base plate 2" in diagonally from each of the corners. In this position they should not interfere with any of the remaining chassis hardware.

(✓) Snap in the PC nylon board supports which hold the MP-B Mother Board and MP-P Power Supply Board to the base plate. There are seven supports for the Mother board and four for the Power Supply board. The shorter end of the support snaps down into the chassis.

(✓) Attach the fuse block, F2 to the base plate using a #6 - 32 x 5/16" roundhead screw, lockwasher and nut.

( ) Attach the bridge rectifier to the base plate using a #6 - 32 x 3/4" screw, lockwasher and nut. Be sure to orient the rectifier as shown in the Power Supply Wiring Diagram.

(✓) Scrape the anodizing from around the hole that aligns with terminal strip TS-1 on the bottom side of the base plate so that when the screw that secures the terminal strip is installed it will touch metal. The anodize finish on the chassis is non-conductive and must be removed at this location to insure a good ground.

(✓) Attach the terminal strip, TS-1 to the base plate using a #6 - 32 x 1/4" screw, two lockwashers and nut. Use one of the lockwashers between the head of the screw and the bottom of the chassis to insure good electrical contact and use the other lockwasher under the nut. Orient the terminal strip as shown in the Power Supply Wiring Diagram.

(✓) Orient the large capacitor clamp as shown in the Power Supply Wiring Diagram and loosely attach it to the base plate using three #6 - 32 x 1/4" screws, lockwashers and nuts.

( ) Orient and install electrolytic capacitor C-3 into the clamp making sure the polarity of its terminals matches with that shown in the Power Supply Wiring Diagram. Secure the capacitor with a #6 - 32 x 3/4" screw, lockwasher and nut.

(✓) Now go back and tighten the three #6 - 32 x 1/4" screws securing the capacitor clamp to the base plate.

(✓) Turn the power transformer, T1 so its four leaded side is adjacent fuse holder F2 and its five leaded side is adjacent the power supply board and secure the transformer to the base plate using four #10 - 32 x 3/8" screws, flatwashers and nuts.

(✓) Place two lugs on each of electrolytic capacitor C3's terminals and secure with #10 - 32 x 1/4" screws. Orient the lugs as shown in the Power Supply Wiring Diagram.

(✓) Complete steps 1 thru 24 of the wiring table supplied with the instructions. Be very careful to make the correct connections and solder only when told to do so. Use the Power Supply Wiring Diagram to locate each terminal and check each step as you go along. You will probably note some of the wires are connected in parallel. This is to accomodate the large currents handled by the system wiring.

(✓) Now that the line cord has been attached, route it back behind transformer, T1 and secure it to the base plate using the nylon cable clamp which is held to the chassis by a #6 - 32 x 3/8" screw, flatwasher and nut. Orient the line cord and cable clamp as shown in the Power Supply Wiring Diagram.

(✓) Orient the MP-P Power Supply circuit board as shown in the Power Supply Wiring Diagram and snap it onto its nylon PC board supports.

(✓) Snap fuses F1 and F2 into their appropiate fuse holders making sure each is in its proper location. They are different values.

( ) There should be three wires on the power supply and two on the MP-B Mother Board connector with the as yet unattached "lug" type connectors. Cut five 1" pieces of heat shrinkable tubing (supplied with the kit) place them over each of the five "lug" connectors and shrink in place with the heat from your soldering iron or heat gun. This is necessary to insulate the "lug" connectors.

( ) If you have snapped the MP-B Mother Board onto the base plate, remove it, and do not install the board until told to do so.

(✓) Attach the silver trim strip to the front panel of the chassis using contact cement or double sided adhesive (not supplied with the kit). Align the trim strip so its rectangular holes align exactly with those punched in the front panel and so that it is square with the front panel.

(✓) Using the same procedure, attach the black trim metal to the front panel. Align it so it butts against the silver trim strip and is square with the front panel.

(✓) Orient the front panel so you are looking at it from the front (trim metal) side with the two rectangualr holes in the lower, right-hand corner. Snap the RESET switch into the left hole and snap the POWER switch into the right hole. The POWER switch should now be nearer the right edge of the front panel. Be sure to install these switches correctly.

(✓) Position the front panel front side down with its lower edge against the front edge of the chassis base place. Be careful not to scratch the front panel.

Connect the following three wires to the specified terminals of the POWER switch. Each of the three should have a "lug" connector on its end so no soldering is necessary. Use the Power Supply Wiring Diagram for terminal locations.

(✓) Attach fuseholder F2, terminal A, to POWER switch, S2, LOAD terminal.

(✓) Attach terminal strip TS-1, terminal C, to POWER switch S2, LINE terminal.

( ) Attach terminal strip TS-1, terminal A, to RESET switch S2, LITE terminal.

( ) Bundle the three wires near the POWER switch with a wire tie. There should be 9 wire ties left. Do not use them at this time.

( ) Recheck all of your wiring steps with the Power Supply Wiring Diagram to make sure everything is wired correctly.

( ) Check very carefully to make sure all connections have been soldered. It is very easy to miss some connections when soldering which can cause some hard to find problems later during checkout. Also look for "cold" solder joints which are another common problem.

This completes the assembly phase for the MP-P Power Supply. Checkout instructions for the power supply are contained in the System Checkout Instructions supplied with the MP-B Mother Board. The System Checkout Instructions are used after having assembled the MP-A Microprocessor/System Board, MP-B Mother Board, MP-C Serial Control Interface and MP-P Power Supply.

WIRE			FROM			TO		
STEP	LENGTH	GAUGE	PART	TERMINAL	SOLDER	PART	TERMINAL	SOLD
WIRING TABLE MP-P POWER SUPPLY								
1	6 3/4"	#18	RECT-1	(-)	No	C3	(-)	No
2	6 3/4"	#18	RECT-1	(-)	Yes	C3	(-)	Yes
3	5 3/4"	#18	RECT-1	(+)	No	C3	(+)	No
4	5 3/4"	#18	RECT-1	(+)	Yes	C3	(+)	Yes
5	Capacitor C-4		RECT-1	AC-1	No	RECT-1	AC-2	No
6	8"	Transformer primary (Black)				TS-1	A	No
7	8"	Transformer primary (Brown)				TS-1	A	No
8	1 1/2"	Transformer primary (Red/Blk.)				F3	B	No
9	1 1/2"	Transformer primary (Yel./Brn.)				F3	B	Yes
10	3 1/2"	Transformer secondary (White)				RECT-1	AC-2	Yes
11	5 1/2"	Transformer secondary (White)				RECT-1	AC-1	Yes
12	5 1/2"	Transformer secondary (Red)				MP-P	A	Yes
13	6"	Transformer secondary (Red)				MP-P	B	Yes
14	5 1/2"	Transformer secondary (Red/Yel.)				MP-P	⏚	Yes
15	8 1/2"	#18	C3	(-)	No	MP-P	⏚	Yes
16	8 1/2"	#18	C3	(-)	Yes	MP-P	⏚	Yes
17	5 1/2"	#18	TS-1	B	Yes	MP-P	⏚	Yes
18	7 1/2"	#18	C3	(+)	No	MP-P	+7	Yes
19	7 1/2"	#18	C3	(+)	Yes	MP-P	+7	Yes
20	14"	#18	TS-1	A	No	lug connector		Yes
21	12 1/2"	#18	TS-1	C	No	lug connector		Yes
22	17 1/2"	#18	F2	A	Yes	lug connector		Yes
23	line cord					TS-1	A	Yes
24	line cord					TS-1	C	Yes

Parts List MP-P Power Supply

Capacitors

C1, C2	1000 mfd @25 VDC electrolytic capacitor
C3	91,000 mfd @15 VDC electrolytic capacitor
C4	0.01 mfd disc @100V capacitor

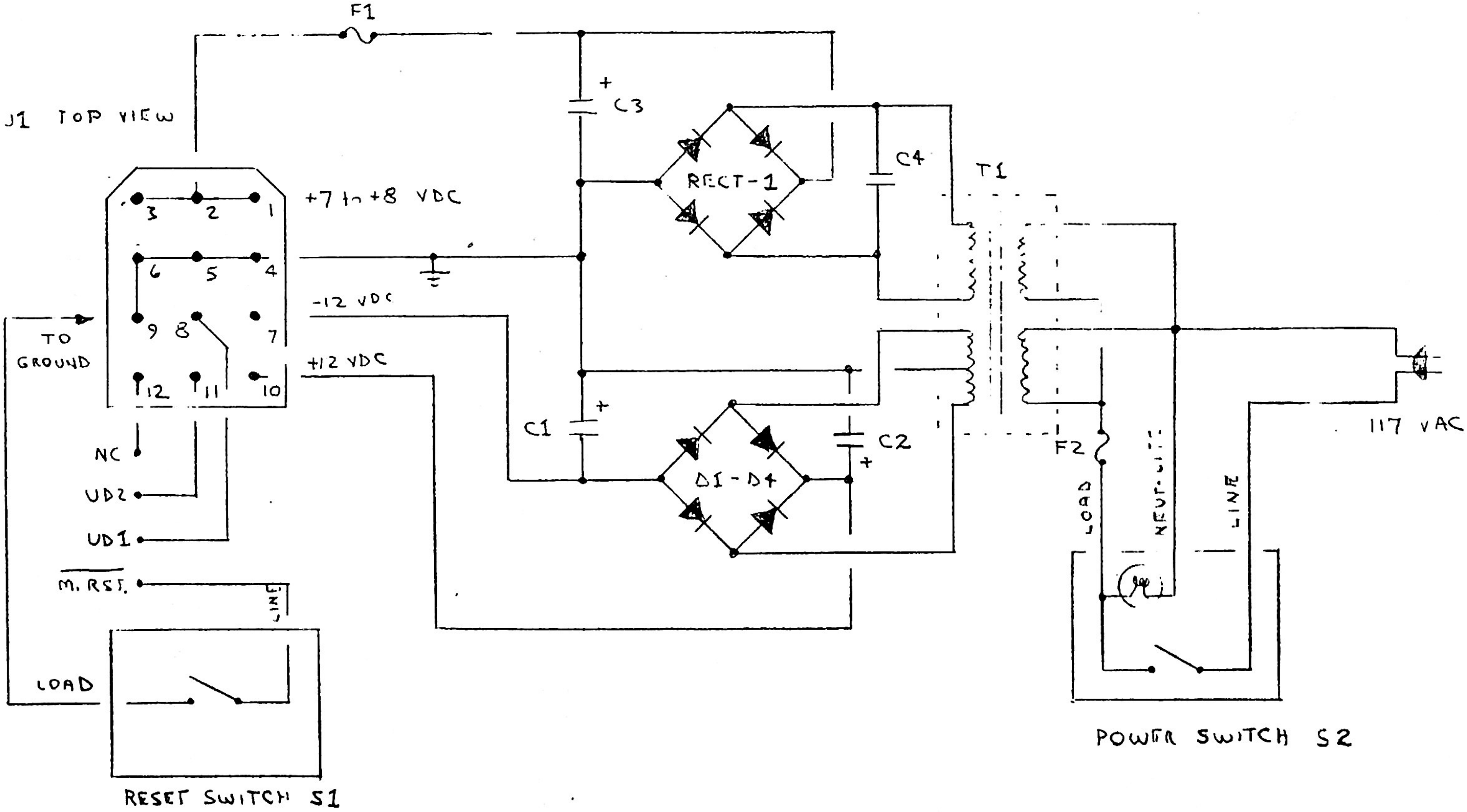
Semiconductors

D1 - D4	1N4003
RECT-1	25 amp bridge rectifier

Misc.

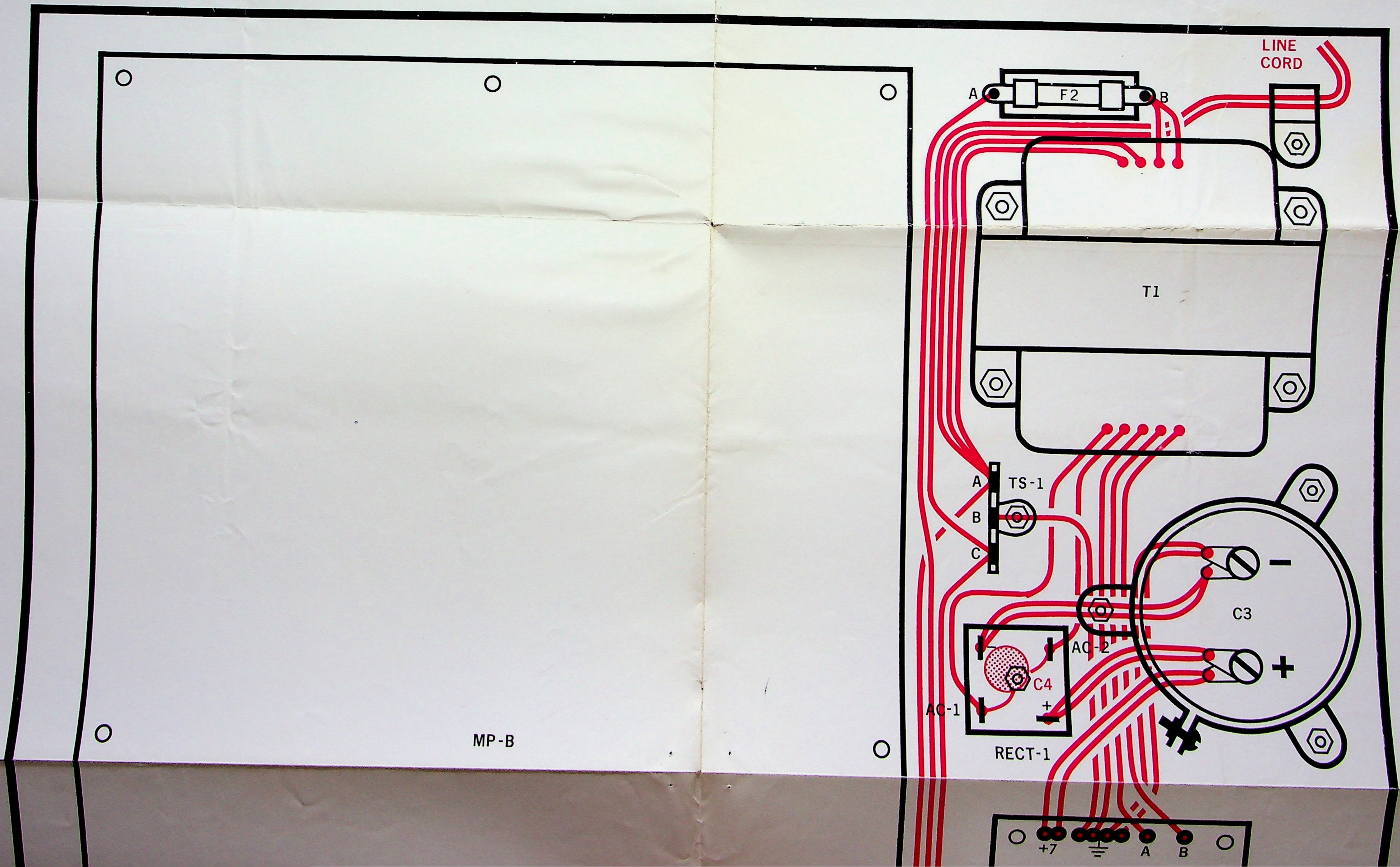
F1	10 amp standard fuse
F2	2 1/2 amp slo-blo fuse
T1	7.25 VAC @10 amp and 24 VAC @0.5 amp secondary 120 VAC @1 amp/240 VAC @0.5 amp primary, power transformer
S1	SPST unlighted RESET switch
S2	SPST lighted POWER switch

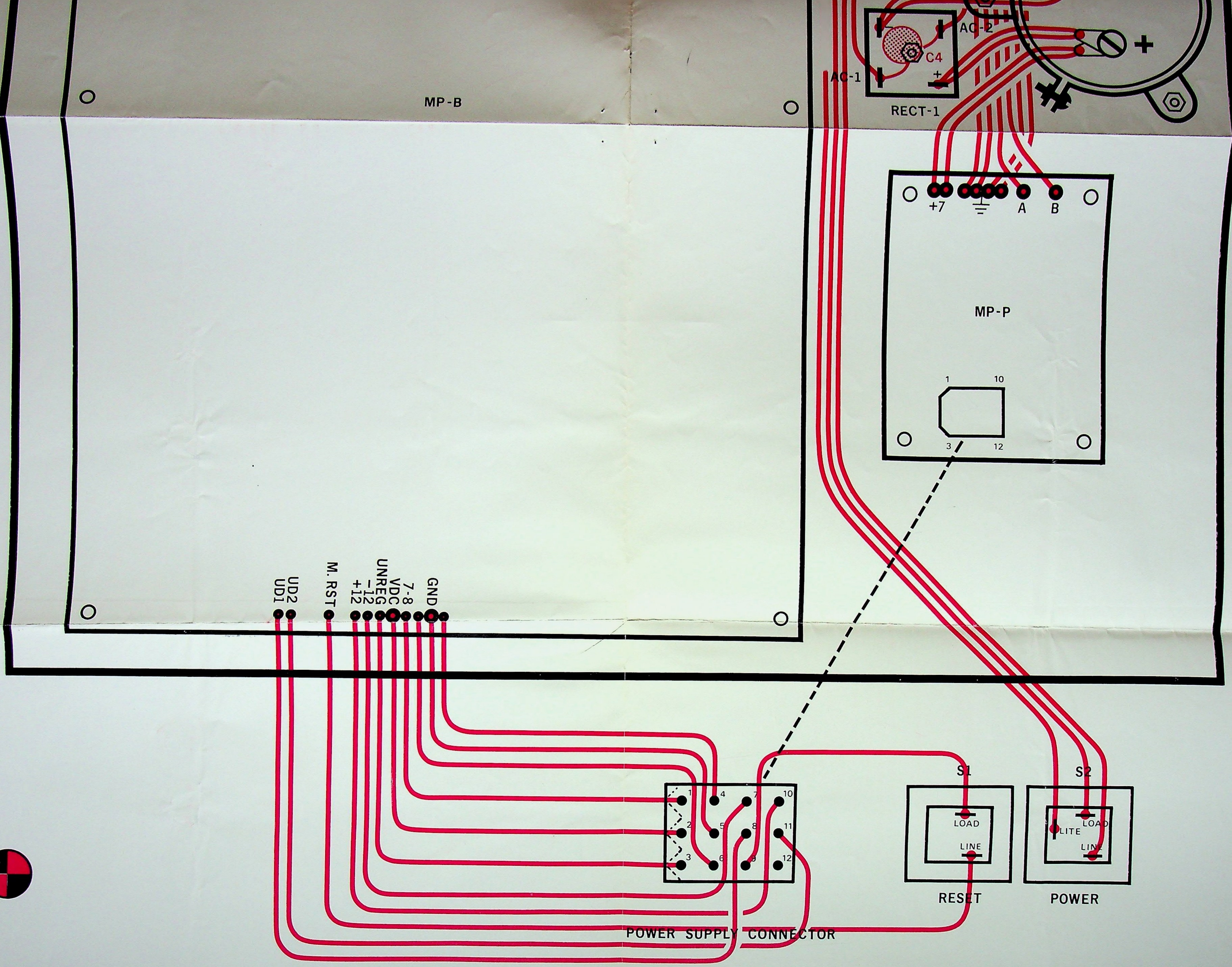
Schematic - MP-P Power Supply


F1
J1 TOP VIEW
+7 to +8 VDC
C3
RECT-1
C4
T1
1
2
3
4
5
6
7
8
9
10
11
12
-12 VDC
+12 VDC
TO GROUND
NC
UD2
UD1
M. RST.
LINE
LOAD
RESET SWITCH S1
C1
D1-D4
C2
F2
LOAD
NEUT.
LINE
117 VAC
POWER SWITCH S2

MP-C POWERSUPPLY
WIRING DIAGRAM

MP-P Power Supply Wiring Diagram


LINE
CORD
A
F2
B
T1
A
TS-1
B
C
C3
−
+
AC-2
C4
+
AC-1
RECT-1
MP-B
+7
A
B


MP-B
AC-2
C4
AC-1
+
RECT-1
+
+7
A
B
MP-P
1
10
3
12
UD2
UD1
M. RST
+12
−12
UNREG
VDC
7-8
GND
1
4
7
10
2
5
8
11
3
6
9
12
POWER SUPPLY CONNECTOR
S1
LOAD
LINE
RESET
S2
LITE
LOAD
LINE
POWER